

# **Advanced Traveler Information System ATIS Implementation and Integration**

## **Task 11: Evaluation Report**

Prepared for:

New York Department of Transportation

In Association with

Rensselaer Polytechnic Institute (RPI)  
Cornell University  
CUBRC/General Dynamics

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Final Report

**Date**

**May 16, 2007**

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## List of Acronyms and Tables

ATIS	Advanced Traveler Information System
ALK	ALK Technologies, Inc.
CUBRC/GD	CALSPAN – University of Buffalo Research Center / General Dynamics
DSRC	Dedicated Short Range Communications
FHWA	Federal Highway Administration
GPS	Global Positioning System
HVCC	Hudson Valley Community College
ITS	Intelligent Transportation Systems
NYS DOT	New York State Department of Transportation
PDA	Personal Digital Assistant
RFP	Request for Proposal
RPI	Rensselaer Polytechnic Institute
TIRC	Transportation Infrastructure Research Consortium
TEA-21	Transportation Efficiency Act for 21 Century
TMC	Traffic Management Center
UITSC	Urban ITS Center at Polytechnic University
USDOT	United States Department of Transportation

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Table 1 Summary of Key Findings and Effectiveness of Processes used in the ATIS Project

## Executive Summary

Advanced Traveler Information Systems (ATIS) are an integral component of the concept of Intelligent Transportation Systems (ITS). ATIS are envisioned to enhance personal mobility, safety and the productivity of transportation. The primary services of ATIS include pre-trip and/or en-route traveler information concerning traffic conditions and route guidance. In addition, "yellow page-type" information related to traveling as well as entertainment, dining and other services may be included. In recent years, significant number of regional real-time traveler services has been developed across the country to aid travelers using different modes.

Realizing the potential benefits of such ATIS services in the Capital District Region, the Advanced Traveler Information System Implementation and Integration Project (referred herein as the "ATIS Project"), was initiated by the New York State Department of Transportation (NYSDOT).

### Background

The *ATIS project* sponsors included the New York State Department of Transportation (NYSDOT) and the U.S. Department of Transportation (USDOT). The project team was led by Rensselaer Polytechnic Institute (RPI), and included Cornell University, Polytechnic University, CUBRC/GD, and ALK Technologies Inc. Sprint PCS provided wireless services. NYSDOT was the project director and contracting authority. Cornell University administered the contract under the

Transportation Infrastructure Research Consortium (TIRC) for the team. The contract was awarded in 2001 and the project ended in 2007.

## **Evaluation Categories**

This evaluation report presents key findings in eight categories of interest to NYSDOT and the other partners;

- 1. Request for Proposal (RFP) Process** - The key issues related to the RFP and the impacts on the actual project later on.
- 2. Contracting Process** - Efficiency of the contracting process; the impacts of contract delays on project development and schedule.
- 3. Project Team Development Process** - Conclusions about the building of the project team; the challenges in selecting appropriate partners and developing working relationships.
- 4. Institutional Coordination Process** - Cooperation between the public agencies and the academic institutions; comments on their infrastructure systems and issues faced during the project.
- 5. Project Management** - What technical issues and conflicts developed and how they were addressed by the team. Knowledge gained from the resolution of hardware, software, connectivity and the project management issues will help NYSDOT in their future ITS work.
- 6. Contribution to the ATIS Business Case** - Did the project create a better understanding of the infrastructure needs, and make a viable ATIS business case for New York State?

**7. Project Expectations** - Conclusions on whether the project met the expectations of its sponsors and research partners.

**Key Findings**

Table 1 presents a brief summary of the key findings and effectiveness of the processes used in the ATIS project. These findings are based on the evaluation methodology adopted by the evaluation team (Polytechnic University), which included reviews of task reports issued by the team, interviews with project partners and sponsors, and attendance at the workshops held by the team.

Table 1 Summary of Key Findings and Effectiveness of Processes

#	Category	Summary of Key Findings/Effectiveness
1	RFP Process	<ul style="list-style-type: none"> <li>The technical solution should not have been proposed by NYSDOT at the project onset.</li> </ul>
2	Contracting Process	<ul style="list-style-type: none"> <li>Significant contracting delays occurred and could have been avoided by better communication and administrative controls. Project schedule was severely impacted.</li> </ul>
3	Partnering Process	<ul style="list-style-type: none"> <li>Partnering with the private sector was very effective and the RPI team was prepared to deal with emerging technology.</li> </ul>
5	Project Management	<ul style="list-style-type: none"> <li>Project team exercised flexibility during both the technology selection process and the development and testing efforts. Team coordination requirements were significant. NYSDOT provided ongoing support to keep the project moving.</li> <li>Technical issues were addressed based on the ongoing rigorous field testing. Product development followed the user needs assessment.</li> </ul>
6	ATIS Business Case	<ul style="list-style-type: none"> <li>This project demonstrated to NYSDOT that it should be the private sector that should own the infrastructure to develop ATIS applications like this in the region.</li> </ul>
7	Project Expectations	<ul style="list-style-type: none"> <li>Partners and sponsors have different expectations from ATIS services and different measures of user satisfaction.</li> <li>This demonstration has brought public, private and research partners together, and has shown how the different expectations can be managed.</li> </ul>

#	Category	Summary of Key Findings/Effectiveness
8	Conclusion	<ul style="list-style-type: none"> <li>• The ATIS project made the partners and sponsors aware of the opportunities for changing policies in infrastructure development. Mobility and congestion management in the region can be further improved if such ITS applications are expanded with a greater role played by the private sector.</li> <li>• This project was a successful demonstration for ATIS development, verification of what the user needs are and what roles should be played by the NYSDOT and other partners to meet user needs.</li> </ul>

## Summary of Benefits for Partners and Sponsors

The following summarizes the benefits resulting from this research project:

- **Benefits to NYS:**
  - This effort created a better understanding of the capabilities of wireless technology.
  - Clearly NYSDOT will benefit from developing future projects and programs in partnership with the private sector to develop ITS data gathering and travel information capabilities.
  - This effort has shown to NYSDOT and the private sector partners that a viable solution that doesn't require fixed roadside infrastructure is achievable.
  - This project helped in making a business case for ATIS in NYS. NYSDOT management will benefit from a better understanding of the prevailing user needs and market conditions, technology solutions and their role in ATIS.

- This project has contributed to building public-private partnership in integrating advanced technologies in the highway transportation system.
  - This project contributed to expanding the knowledgebase of electronic hardware to the NYSDOT.
  - ATIS could help in keeping delays at minimum, thus contributing to a reduction in pollution, energy usage, and improvement in mobility and economic growth of the region.
- **Benefits to Users:**
    - The Task 8 report documents detailed survey responses received from the three user groups who participated in the demonstration project.
- **Benefits to the Private Sector:**
    - This project makes it possible for the private sector to understand the potential of integrating wireless-based roadside communications capabilities with the GPS-based mobile devices. This integration is now better understood in the region.
    - This project fostered software development efforts and revealed new opportunities for commercial development.

*“Without this demonstration project, ALK couldn’t have developed a commercially marketable CoPilot Live product... In the end, if ATIS takes off, it is because of this project”.*

–Alain Kornhauser, ALK Technologies Inc.

- This demonstration in the Capital District has shown that the benefits of ATIS are not just for big cities, but also for less populated regions.

The private sector should be encouraged to provide wireless infrastructure through public-private partnership. The private sector is best suited to provide traveler information. This project indicates the possibility exists for the NYSDOT to pursue partnering with the private sector, so NYS will not have to invest in costly fixed infrastructure.

- **Benefits to USDOT:**

- This project provided insight in today's emerging technologies. This knowledge will help USDOT to let others know how to implement emerging technologies by partnering with the private sector.
- Technology transfer benefits from this case study will assist ATIS development in other parts of the US.

*"This project has opened our eyes. It has shown us the possibilities"*

–Michael Schauer, ITS Specialist, FHWA New York Division Office

## **Conclusion**

The overall conclusion of this evaluation report is that this project has demonstrated how NYSDOT will come to rely on the private sector for sources of information to support its operations. And given the proper partnering environment, the private sector can serve NYSDOT needs in the region.

## **1.0 Introduction**

### **1.1 Project Background**

The ATIS project was initiated by the Transportation Infrastructure Research Consortium (TIRC) under the auspices of the New York State Department of Transportation (NYSDOT) under proposal # Z-01-02. The project development and management team was lead by the Rensselaer Polytechnic Institute (RPI), with the collaboration of Cornell University, and CUBRC/ GD.

The ATIS contract was awarded in 2001, work began in 2003 and the project ended in 2007.

### **1.2 Objectives of the ATIS Project**

The goal of the project was to create and test a wireless ATIS in the area of the proposed ITS Test Bed Laboratory. This original goal was to meet the needs of the highway users and transit customers in the project area and to aid the transportation operating agencies in meeting these needs. In addition, the system was to be compatible with and be integrated into the existing Capital District ITS infrastructure through the Traffic Management Center (TMC). This effort was to be supported by the regional ITS Architecture [1].

## **1.3 Polytechnic University Role**

The Urban ITS Center (UITSC) of Polytechnic University was retained as subcontractor by RPI to provide assistance in the following task: Task 11: Prepare the Evaluation Report: “The report evaluates issues such as the effectiveness of the partnering relationships, the effectiveness and means used to resolve technical issues, and techniques used with the private sector, including finances.”

This report presents key findings for the primary benefit to the members of the Transportation Investment Research Consortium (TIRC) and will be a reference for the New York State Department of Transportation (NYSDOT) for future work.

## **1.4 Purpose of the Evaluation Report**

The purpose of this evaluation report is to present a set of key findings from the tasks performed during the development of the ATIS system (Task 1 through Task 11). The information presented in this report is based on the task reports developed by the project team, the discussions at meetings and interviews with the project team members.

The report focuses on the processes used during the project development and contract management, development of technical solutions and partnering

relationships, and roles played by the public and private sectors during the project.

## 2.0 Evaluation Methodology

### 2.1 Evaluation Definition

According to the *ITS Evaluation Guidelines-TEA-21 Evaluation Guidelines*, “evaluation is the reasoned consideration of how well the project goals and objectives are being achieved. The primary purpose of the evaluation is to cause changes in the project so that it eventually meets or exceeds its goals and objectives”. [2]

### 2.2 Evaluation Methodology

Based on the above definition and the project requirements, the following evaluation methodology is used:

- The evaluation team gathered and reviewed project information, data analysis, and project task reports from the project team and other organizations.
- The evaluation team has attended the project review meetings, workshops and telephone conversations with the project team members.

- The evaluation team conducted interviews with the RPI project managers and researchers, the ALK software development team, the NYSDOT project manager, and the Cornell University contract administration staff.
- The evaluation team reviewed the current developments in the wireless and ATIS industries to address relevant issues.

## 2.3 Key Evaluation Questions

The following questions were posed by the evaluation team to the concerned parties:

- What were the key issues related to the Request for Proposal (RFP) and contracting processes and what were their impacts on the ATIS project development, implementation and schedule?
- How the project team and partnering relationships were formed, and what have we have learned from this experience?
- What were the technical difficulties faced by the project team and how they were overcome? What was the level of cooperation, communication and coordination among public sector agencies, and what institutional issues were encountered and how they were resolved?
- What role did the private sector organizations play in the product development and implementation levels? Did this research project help them in applicable product development to meet NYSDOT's needs and make a business case for ATIS systems like this in the State?

## 2.4 Summary of Findings on Key Issues

The evaluation team has identified the key issues based on the interviews and discussion with NYSDOT and the project team partners, and then reviewed the information presented in the detailed project task reports [3].

This section states key issues explored in the ensuing sections of this report.

- **Request for Proposal (RFP) Process** - A technical solution was proposed by NYSDOT at the project onset, specifically, the use of wireless technology from U.S. Wireless, which later became a problem for RPI. Lessons learned from this approach are noteworthy.
  
- **Contracting Process** - This project experienced significant delays due to shortcomings of the contracting process, including administrative processes at TIRC and NYSDOT. The resulting delays had a significant impact on the project team, project development, and schedule.
  
- **Project Team Development Process** - Conclusions about building a research team, challenges in selecting appropriate partners and nurturing relationships. The findings will provide a better understanding of institutional

barriers and issues, and the techniques used to overcome them for a successful outcome.

- **Project Management Techniques Used to Resolve Technical Issues** -

What technical issues and conflicts developed and how they were addressed by the team. It is also of interest to know the level of cooperation and coordination among public agencies in the area, and methods used by the team to keep them involved in the project.

- **Contribution to ATIS Business Case** - Did the project make a viable ATIS business case for the state? This knowledge will help in future ATIS development.

- **Project Expectations by Partners and Sponsors** - Conclusions on whether or not the project met the expectations of its sponsors and research partners will help NYSDOT in shaping future projects

The next six sections provide a detailed account of the key findings for these categories.

## **3.0 Key Findings on the Request for Proposal**

### **3.1 Background**

The funding for this project was identified with a highway development project in the Capital District region, and this dedicated funding was allocated to create an ITS test-bed laboratory environment at RPI as well as the associated research. Once the funding was secured, NYSDOT prepared the Request for Proposal (RFP). The RFP process was overseen by the Transportation Infrastructure Research Consortium (TIRC), administered by Cornell University. Proposals were submitted in August 2001. The Federal Highway Administration (FHWA) was the overseeing body and ensured that the project objectives were met.

This section outlines key issues encountered during and after the RFP Process.

### **3.2 Pre-selection of the Technical Solution**

At the onset of the project, a technical solution was proposed by NYS DOT that included a specific vendor, U.S Wireless, and their RadioCamera as the sensor technology of choice for the project. However, in the last months of 2002, U.S Wireless filed for bankruptcy and ceased to become a viable technology option. The RPI project team later noted that the viability of U.S. Wireless solution had

never been established, beyond the company claims. This was supported by two separate studies:

- In 2003, the University of Virginia released an evaluation report on the speed accuracy of the U.S. Wireless technology, which found that the accuracy was not of the quality advertised by the company.
- A separate study by the University of Maryland focused on location accuracy during the same period as the University of Virginia study, but the results have never been published.

After the failure of U.S. Wireless, the RPI team searched for an alternate technical solution.

*“There is a strong feeling among the project team and NYSDOT that specifying a technical product/system without an investigation of product capability and viability should be avoided. The delays in the contracting process worked to the project team’s advantage because studies found the data provided by U.S. Wireless was of questionable quality. With U.S. Wireless no longer as a viable option, the team was able to investigate many possible solutions. The lesson to be learned for NYSDOT is to avoid pre-selecting any technology or vendor without proper investigation and provisions to investigate alternatives.”*

–Project Team

The following observations are made with respect to technology selection:

- By pre-selecting US Wireless solution, there was no research potential left in this key part of the project. The device capability was not known nor proven by U.S. Wireless as the team later learned.
- In the future, NYSDOT should avoid such an approach and let the research effort develop an appropriate solution based on investigations

### **3.3 A Search for an Alternate Technical Solution**

With the loss of U.S. Wireless, a search began for a new technology. Work continued on the requirements for the in-vehicle portion. During 2003, the project team conducted extensive research into available and emerging technologies. Work being started by AirSage showed promise as a passive sensing system, but was later dismissed due to cost.

One meeting was also held with managers of the OnStar system at General Motors to brief them on the project and its goals. This meeting did encourage the team to see how well the project fit with General Motors' view of the future of vehicle technologies.

#### **3.3.1 Selection of ALK Technology**

During a presentation on Dedicated Short Range Communication (DSRC) systems, the team became aware of on-going work with ALK Technologies. An academic relationship already existed between the project's principal

investigator, Professor George List and Professor Alain Kornhauser of Princeton University, who is also the founder of ALK. Direct communications with ALK began in late 2003. These meetings with ALK resulted in an agreement to proceed in modification of their existing CoPilot product to meet the goals of this ATIS project. The onboard device would be a pocket PC with a wireless connection to the Internet to transmit data and receive updated travel information. This system would not require any new fixed infrastructure,

*“A significant lesson to be learned from this emerging infrastructure development experience is that future ITS projects should encourage private sector-based wireless solutions. NYSDOT should not engage in erecting roadside infrastructure, but should partner with private entities.”*

–NYSDOT Project Manager

## 4.0 Key Findings on the Contracting Process

### 4.1 Background on TIRC Contracting Process/Mechanism

NYSDOT used an umbrella contract mechanism with TIRC (administered by Cornell University) to engage universities to conduct research projects. In order to create the ATIS project, TIRC sent out request for proposals in July 2, 2001, which resulted in a fully executed ATIS contract on April 1, 2003.

Several project extensions were granted by TIRC and NYSDOT during the course of the project. In October 2004, a revision to the contract was submitted to TIRC that included, among other things, an extension of the project beyond the expiration date of April 2005. The TIRC umbrella contract with NYSDOT was also expiring in August 2005, which meant the ATIS project could not be extended beyond that date. The extension to the ATIS project scope was not completed until October 2005. During the period from April 2005 until October 2005, no bills could be processed by Cornell for the project team or its subcontractors. A lesson to be learned from this experience is that NYSDOT and TIRC should initiate and complete umbrella contract renewals quickly to accommodate ongoing research projects. [4]

## 4.2 Contracting Process for the Project

The project team and NYSDOT have reported that the contracting process used for this research was too slow, and caused significant delays in the schedule and frustrations to the team.

*“The lesson to be learned from this experience is that a research project is different than a traditional construction contract and consultant agreement. Research projects should be set up differently administratively and should be provided with the proper resources and a support mechanism at the regional (local) level that was not the case here. We are not building a bridge here.”*

–NYSDOT Project Manager

## 4.3 Impact on the Project Schedule

The RFP called for a project duration of 16 months (excluding Task 10, the regional deployment, which was unfunded). The project reviews show that the slow pace of contract processing and changes in scope contributed to delays in the schedule. For example:

- Task 1-X1, Determining User Needs, was to be a workshop to identify the user groups followed by focus groups to determine the needs of the user

groups. Discussions between RPI and Cornell changed this to be surveys of the principal user groups – the employees of the Rensselaer Technology Park, the students and staff of HVCC, and the residents of North Greenbush. The original task was scheduled for two months. Changing from focus groups to surveys was a significant change of effort. Preparing and delivering the survey instruments, compiling the results and producing a final report took nearly a year

- The loss of U.S. Wireless led to the need to develop the technical specifications for the new software during the spring and summer of 2004, followed by a rigorous testing program during the fall of 2004 before delivering the in-vehicle system to the users.

#### **4.4 Administrative Hurdles**

The administrative hurdles at various levels, including at RPI, Cornell University and NYSDOT contract management contributed to delays that could have been avoided with better administrative support. The following observations are made to support this effect:

- Cornell University administers the TIRC contact with the NYSDOT Contact Bureau. According to the TIRC administration, the contract for this project was not different from any other TIRC project in spite of the four parties that constituted the project team. TIRC managed the contract with RPI, the project manager. Over 18 months elapsed from the submission of the RFP in August 2001 until all subcontracts were in place

with RPI. The largest portion of the period was contract administration between NYSDOT and TIRC.

- Most projects allow for the submission of periodic bills as effort is expended and costs are incurred. However, since the source of the matching funds was not completely identified at the time the contract was issued, NYSDOT specified that reimbursement would only occur at the completion of tasks. This caused confusion with contracting offices from all of the project team, and resulted in numerous returned bills. Each team member has the responsibility of making their respective contract office aware of unique provisions of project agreements and ensuring that billing requirements are met.
- At the NYSDOT regional office, existing administrative processes do not account for the oversight of earmark projects by universities. Decreasing resources at the regional level led to the project manager's time competing with many other responsibilities. There was also a feeling that the normal "civil engineering" type project philosophy is not suitable for research projects like this and alternatives to the existing processes should be developed.

## **4.5 Frustrations to the Team**

Contract processing delays not only hurt the project schedule, but they also cause frustration among the team members. It is difficult to hold keep any project

team together and long delays force allocation of resources to other projects that are chargeable.

*“This project created a significant level of frustration to team members and kept the team idling for a long period (18 months, from RFP response to actual contract start). The valuable lesson here is for a team to anticipate delays and prepare.”*

–RPI Project Manager

## **4.6 Learning to Deal with Rapidly Evolving Technology**

The evaluation team has identified the following two dominant themes:

- 1. Prepare contract mechanics to deal with a sudden change needed to respond to new situation on hand.**

Technology is evolving so quickly, normal contract mechanics and technology evolution follow different time lines. Wireless technology in particular has gone through a rapid cycle of standards, services and products, and abilities of business entities to survive in the competitive environment.

ALK, a vendor who is part of the ATIS industry, has a strong view on the rapid changes in the cell phone industry making an affordable portable navigation and travel information device a reality. ALK has adopted this development in its business model and created a marketing focus at the

company. ALK believes that cell phones capabilities (memory, video, GPS etc.) have altered the landscape of the “industry”.

## **2. Remain flexible in decision-making.**

In this case RPI and NYSDOT Project Managers had to remain flexible in dealing with the ongoing issues and their resolutions (such is the nature of a research project).

NYSDOT emphasized that the project initially was not correctly set up at the local level and the current project manager did the best he could. (He became a project manager by default, when the previous project manager retired.) There was a realization that both project management skills and the familiarity with the internal organizational mechanics at NYSDOT are essential requirements for effective management of projects dealing with emerging technology.

NYSDOT further stated that ALK has shown a great deal of flexibility in product development and technical management.

*“A planned approach’ to risk management should be taken in all future R&D projects. We have to realize that the existing contract administration and project management is not suitable for R&D project.”*

–NYSDOT Project Manager

## 5.0 Key Findings on the Project Team Partnering Process

### 5.1 Challenges in Partnering

The assembling of an appropriate team to conduct research is central to a successful outcome. RPI had realized that a project of this scope demanded multiple partners and looked beyond a single unit to strengthen their proposal. RPI also realized that trust among partners was an essential ingredient in development of the team. Relationships existed among the TIRC members and RPI was able to draw upon those relationships and bring the appropriate members and their strengths into the project team. However, finding commercial partners was a greater challenge.

“The right partner must have a culture that promotes research; the wrong partner is one that focuses on product.”

–RPI Project Manager

The challenge was to find companies that had a research focus matching the objectives of this project. Most companies are not willing to compromise on their intellectual property and they are not willing to advertise the fact that a technology being tested does not work. A marketing-oriented business model that sells products and generates revenues doesn't allow for research and

partnering without adequate returns. This eliminates large number of potential partners. For example, MapInfo, a company located in the Rensselaer Technology Park, was a logical choice for partnering, but this project did not fall within their research interests.

## 5.2 Project Partners

The project partners in the ATIS were as follows:

- **RPI** - As the research team leader, was responsible for the project management and experiment development.
- **CUBRC/GD** - Was originally selected to provide expertise in ITS technology, regional development, and field deployment if needed. They, however, didn't have a role in the research. With the change in technology from U.S. Wireless to ALK, CUBRC/GD's role was reduced.
- **Cornell University** - Provided TIRC contract administration with NYSDOT, developed the user information needs, and helped shape the experiment.
- **Polytechnic University** - Conducted the project evaluation and helped shape the experiment.
- **ALK** - Provided the software, system integration and technical support. ALK has a strong interest in the ATIS industry and their business plan reflects that. RPI established an excellent working relationship with ALK.

- **Consensus Systems Technologies Corporation** - Was selected for their experience in the development of ITS Architectures
- **NYSDOT** - Was the sponsoring agency and provided the project management and liaison with the FHWA.
- **Sprint PCS** - Provided the wireless connection that allowed the transfer of data to and from the vehicles.

*“Academic research project like ATIS should be included as part of the planning process. That helps the state.”*

-Manny Insignares, Region-1 ITS Architecture Team Member,

ConSysTech

## **6.0 Key Findings on Project Management**

### **6.1 General**

To ensure the successful outcome of this research project, the project team made a concerted effort to exercise a great deal of flexibility during the organization of the experiment (Task-6), selection and acquisition of the component technologies and implementation (Task-7), and conduct of the experiment (Task-8).

### **6.2 Project Coordination**

A project of this size and one involving so many players depends heavily on effective management, on coordination, and on communication. Keeping all members informed about progress and status of the overall project would be very important. Furthermore, taking advantage of everybody's experience and inputs across subtasks would be an excellent mechanism by which to keep everybody involved and feeling like true stakeholders. These mechanisms will also heighten everybody's sense of responsibility for the successful conduct and timely completion of such a major project. The project would greatly benefit from these inputs and interactions.

This project and its schedule were seriously affected by the dependence on an outside vendor for software development. These delays were inevitable when a change in the principle source of data was no longer a viable option. Just over two years from signed contract to field test on a never before seen technology could be considered a reasonable development platform for a complex system,

This project has shown that for a successful outcome, good project management, coordination and, above all, communication are the essential ingredients for succeeding in a large research project with a number of subcontractors.

## 7.0 Key Findings on the ATIS Business Case

NYSDOT, private sector partners, and research team members believe that the project has created a better understanding of the wireless infrastructure requirements and for the business case for ATIS like this.

*“This project has shown that you can provide real-time, dynamic information at low cost. Who is going to take this on for a business? Most likely, the wireless companies like Sprint or Verizon.”*

–RPI Project Manager

This project has made NYSDOT realize that the emerging wireless infrastructure developed by the private sector offers a mechanism to deploy ATIS, and the agency need not be engaged in such infrastructure development itself. There was a strong feeling that the State should not in any way compete with the private sector, but rather should partner with them to develop such services. The thrust behind this conclusion is that the State’s mindset of infrastructure ownership is changing.

*“NYSDOT is standing on the outside, and watching, they no longer own (ATIS) data.”*

–RPI Project Manager

*“This project has opened our eyes to possibilities. It was a good beginning that needs to be expanded to cover not just technology, but a larger area, more probes to bring down the cost of deployment.”*

–Michael Schauer, ITS Specialist, FHWA New York Division Office

The following observations were made by NYSDOT:

- The traditional role in data gathering for ATMS/ATIS applications by the state may not be necessary and new methods can be adopted based on wireless approaches and partnering.
- In a development process of a technical system, both functions and standards must be included. This project has shown that both Regional ITS Architecture and standards applications can be included in ATIS and other applications using the Systems Engineering Process (SEP).

## 8.0 Key Findings on Project Expectations

The goal of this ITS research project was “to use wireless technologies in highway transportation to provide real-time information to drivers in support of their decision-making.” This goal had the following specific objectives:

1. To assist drivers in making better travel decisions by altering their route based on real-time information of highway travel times.
2. To understand how the private sector can create the infrastructure that NYSDOT needs to provide traveler information.
3. To enable the field testing of ITS products and customers’ acceptance.
4. To assist USDOT in demonstrating the driver mobility benefits of ITS integration, architecture, and standards.

These technical objectives were successfully accomplished by this research project.

On the institutional side, however, some NYSDOT’s managerial staff felt that this ATIS project was competing with more “important” projects. Thus, although the technical aspects of this ATIS project were successfully executed, the impact that this project will have on NYSDOT’s ITS program depends on the agency’s priorities and the contextual content of its mission.

From its inception, NYSDOT, like many other state DOTs, has operated within the traditional technology of civil engineering: structures, materials, geotechnical

engineering, and project management. However, with ITS, the world of DOTs is changing to include electronics, sensors, information systems, and communications. Advancing the integration of ITS technologies into an existing transportation systems to achieve greater efficiencies and to provide real-time information to travelers system-wide, will require new arrangements with the private sector

As shown by this project, the private sector would like to develop ATIS services (i.e., real-time traveler information) based on the emerging GPS-based wireless solutions, integrated with cellular phones. The private sector asks: “How do we sell this technology to provide for the ATIS needs in New York State?” The answer will have to wait. At this time NYSDOT has no plans to extend the findings of this project to other parts of the Capital Region.

*“The project was a good attempt to understand Advanced Traveler Information Systems”.*

–Project participant, Cornell University

## 9.0 References

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2. ITS Evaluation Guidelines-TEA-21 Evaluation Guidelines, USDOT
3. RPI project team task reports, 2005-2006.
4. TIRC Administration, Cornell University, Internal Memo to Evaluation Team, October 2006.
5. Persons Contacted by the Evaluation Team:
  - a. Manny Insignares, ConSysTech, Region-1 ITS Architecture Team Member
  - b. Dr. Alain L. Kornhauser, ALK Technologies, Inc., President
  - c. Prof. George F. List, RPI (formerly RPI Team Manager, currently at North Carolina State University)
  - d. Dr. Earl E. Lee, RPI Project Manager
  - e. Brian Menyuk, NYSDOT Project Manager
  - f. Dr. John R. Mbwana, Cornell University
  - g. Dr. Armin H. Meyburg, Cornell University
  - h. Mike Schauer, ITS Specialist, FHWA New York Division Office
  - i. Prof. William A. Wallace, RPI, Program Manager